Hawthorne. Secretary Rusk's crusade, 1893.

SECRETARY RUSK'S CRUSADE.

MONEY is spent in Washington for other things besides pensions. Congress pays for the protocols, proclamations, treaties, and diplomatic correspondence of the State Department; for the operations and development of our army and navy; for the distribution of our mails; for the infliction of our justice; for the administration of our finance; for the President and Congress themselves, by whom the "appropriations" are advised and ordered. All these items of expense, while they are necessary to the administration of a civilized state, are to be regarded in the light rather of necessary evils than of unalloyed benefits. They may protect us from loss in some cases and facilitate our livelihood in others; but they don't put money directly in our pockets, or food in our mouths. They conserve prosperity, but do not create it. They don't spread dollars over the ground for us to pick up, nor cause manna to fall from heaven.

There is, however, one department under government which directly and palpably makes us rich. You put a nickel in the slot, and pull out a five-dollar bank-note, or a good dinner of four courses with wine. Obviously, therefore, the more cents you put into this particular slot, the better off you will be. And since, after all, it is the seventy million inhabitants of this country who pay the money which the Senators and Representatives in Congress assembled only distribute, it behooves the former to intimate to the latter that, while the other departments at Washington are, of course, to be maintained in a presentable and efficient condition, this particular department must be made the object of especial favor, the means and facilities it asks for shall be given it, and it shall be humored to the top of its bent. For this, like the famous historical case of the Belly and the Members, is one of the instances in which "spoiling" does not spoil, but augments the health and activity of the entire body politic.

When we discuss a dinner of ceremony, we invariably (owing to some moss-grown tradition, whose origin is lost in the phantasmagoria of antiquity) begin with oysters or clams on the half-shell, and, after an interval for soup, serve a course of fish. With the exception of these two courses, which come out of the water, all the rest of the dinner, down to the cheese and the nuts and raisins, comes out of the ground, or off it, and is, for the most part, the result of human labor in cultivation or in breeding. And since, whatever else we do, we have to eat and drink anyhow, it follows that we ought to make sure that the source of our food and drink is ample and prosperous.

Our agricultural interests divide naturally into two main branches: one relates to that part of our produce (nine-tenths of the whole) that we consume here at home; the other, to the remaining tenth, which we export to foreign countries. The purpose of the Agricultural Department at Washington is to apply scientific methods to the development and improvement of agriculture. That this function is of the highest

importance, no intelligent farmer now pretends to doubt. And, as time goes on, and our population increases, and our foreign markets enlarge, and our lands lose their first freshness, its importance will increase.

Science can be applied to agriculture in three principal ways: first, to bring about an increased yield from the land now under cultivation, and to bring land not now cultivated into a fertile condition; secondly, in curing or in preventing the various diseases to which plants and farm-animals are subject, and in protecting them from the attacks of birds, insects, and other animals; thirdly, in extending our agricultural production so as to cover all articles of produce that are consumed in this country, and to obviate the necessity of depending for our supply of any of them upon importations from abroad. Furthermore, organized and intelligent effort is necessary to enlarge the foreign markets for our produce, to create a lively demand for it there, and to determine what kinds of produce we can furnish to them, from our surplus, with the least trouble and the most profit to ourselves. In all these beneficent activities the Agricultural Department is the chief agent.

The effete monarchies of Europe felt the need of science to help them out of their agricultural straits long before we did; they have spent many years in experimenting for improvements, and the consequence is that many of their agricultural methods and results are to-day better than our own. It is our manifest duty and advantage not only to profit by the knowledge they have acquired, but to follow independent studies, adapted to the different agricultural conditions of our country. The average yield per acre in Europe is larger than it is here. In the treatment of plant and animal diseases, Europe originally led the way, though we are now well abreast of them. Mere "practical experience," of which the old-fashioned farmers were wont to make so much, is not enough in this age of desperate competition and growing demands: we must add to it a thorough acquaintance with the most advanced scientific principles. The direct benefits of such knowledge, which have already accrued, are past computing. In England, some years ago, the prevalence of animal diseases caused a loss to farmers and breeders of at least four hundred million dollars. These same diseases, when they made their appearance afterwards in this country, were checked and finally exterminated by the remedies indicated by scientific investigation. By the invention of the mixture used in "spraying machines" for the destruction of insects injurious to vines and fruit-trees—an invention based on scientific experiment—three-fourths of our total fruit-crop, in California and elsewhere, have been saved. Bugs which attack vegetables would have destroyed our crops wholesale, had not science met and overcome them partly by the importation from abroad of minute parasites known to be fatal to them, and partly by the propagation among them of certain insect-diseases. The credit for the publication and advocacy of these measures, and often for their discovery likewise, is due to the Department of Agriculture.

We have heard a good deal lately of the triumphs abroad of the American hog; and the obstacles raised against the importation into Europe of American beef have also been overthrown. To whom are

these successes due? To the Department of Agriculture, as administered by Secretary Rusk. It had been said that our pork was afflicted with trichinæ, and our beef with foot-and-mouth-disease and with Texas fever, not to mention other ailments. Secretary Rusk is a man of energy and generalship. He began by finding out what were the efficient remedies for the diseases in question. Then he hunted down every herd of cattle and every drove of hogs in the country in which the diseases were rumored to have made their appearance. He isolated, cured, and slaughtered, as circumstances demanded. Before long, he had extirpated the contagion wherever it was known to exist. He examined the flesh of the hogs microscopically. But all this was not enough. Officers of foreign customs, acting in the supposed interests of their home products, refused to admit our animals at any price; they declined to believe that they were healthy, or even to prove by inspection that they were not. Secretary Rusk had in reserve a parry for this blow. After much trouble, he succeeded in securing the appointment at foreign customs-offices of accredited American inspectors, and guarded the export stations on our own shores with a corps of examiners, enjoined to examine and to label as sound every pound of meat and every animal that we sent abroad. The result was that foreign governments no longer had a leg to stand on in their rejection of our goods; and it soon appeared that the meat that went to them from us was superior in quality to the best that they could themselves produce for home consumption. The increased value during the past year of exported meats and beeves is estimated to be one hundred and fifty millions of dollars. As against this enormous increase is to be set the cost of the measures which led to it,—the inspection here and in Europe, the work at interior stock-yards, the tagging and recording, —all amounting to about one hundred and fifty thousand dollars, And yet Secretary Rusk found it very difficult to persuade Congress to vote the appropriation necessary to achieve so magnificent a result. The prospects favor the constant enlargement of this increase in the future, while the cost of inspection will be as constantly diminished.

But the Secretary is not satisfied with wringing from the officials of foreign nations a reluctant consent to allow our good things to reach their hungry populations: he aims to appeal directly to the populations themselves. Until very lately, for example, the use of corn and corn-meal as human food was almost entirely unknown in Europe: the people imagined it was fed to animals only. Mr. Rusk despatched agents to the other side to educate these benighted people. The success of these agents has been great. Corn-bread is likely to become as popular on English breakfast-tables as muffins and crumpets are now; and in Berlin "corn-kitchens" have been arranged for, and a mixture of rye and corn is to constitute the bread-ration supplied to the German army. This is only the beginning of the good work in the case of a single cereal, in its relation to foreign consumers alone. The prospects for the future are obvious; and, as Secretary Rusk observes, an increase in our crop exports of only ten per cent. would put sixty million dollars more a year in the pockets of our farmers.

The value of our crops for 1891 was seven hundred million dollars

greater than it was for 1890. This is a good showing; but, in numerous ways, the Department of Agriculture is working to make a better and still a better showing hereafter, not only improving the yield, and the quality of the yield, of land now under cultivation, but making more land cultivatable, and lowering prices by bringing the farmer and the consumer into closer relations, and thus eliminating the huge profits of the middleman. For one thing, experiments have been making in sugar-manufacture, with a view to retaining for ourselves the hundred million dollars that we annually pay for the imported article. Sugar-cane, sorghum, and beets are the three sources of commercial sugar. The Department has shown that the southern belt of our country can profitably produce the first, the middle belt the second, and regions farther north the sugar-beets. A process has been discovered whereby sorghum, treated with alcohol, yields double the amount of sugar that it has been hitherto possible to obtain from it. Our beet resources are incalculable; and altogether the prosperity of home-made sugar is assured. Again, a thorough study of forage grasses has been made, in order to discover which varieties are best adapted to given localities, and especially to obtain a grass which will flourish in arid regions without irrigation. Such a grass has been found: it is as good as that in the moist lands, though it is slower in its rate of growth. In the course of a few years millions of acres, now barren, will have been given to agriculture by this discovery, which but for the Department of Agriculture might never have been made. Scarcely of less importance is the investigation of the best means whereby swamp-lands may be reclaimed; and of the preservation and distribution of forests, so as to both prevent disastrous floods on the one hand, and to restrict arid areas on the other. Once more the Department has instituted a novelty, in the analysis of food-values. This is a study which requires and is receiving the nicest and profoundest scientific attention. It involves a consideration of the obscure laws of nutrition, and minute researches in analytical, organic, and physical chemistry. Its results enable the farmer to discount the "breed" of his cattle by furnishing them foods capable of developing and improving them in any desired direction. He can now mould them at will to suit the demands of the market, or his own convenience: both the means and the results are not theories, but ascertained facts. Their practical value need not be dwelt on.

But it is time to draw attention to a special feature brought into existence by the Agricultural Bureau, by which its general usefulness is vastly increased: I mean the Agricultural Experiment Stations, one or more of which have already been established in all the States and Territories of the Union. Most of them are still in their infancy; but the benefits they have conferred upon the farming interests of this country are more than can be enumerated in a volume of statistics.

Farming, broadly considered, is experimenting with soils, manures, and crops; with cattle and fodder; with dairy produce, and with farming-tools; and the test of the best farmer is that he can get the best returns from the poorest land. The physical appliances of agriculture are no longer merely the hoe, the spade, and the plough, with a rake or two, and a scythe. Machinery is indispensable, and mechan-

ical skill to use it. Successful farmers are, nowadays, intelligent and persistent experimenters. They must keep their eyes and their minds open; they must be men of education, and, so far as possible, of scientific training. But life is short, and competition pressing. The farmer has to make his living as he goes along. He cannot withdraw himself for three or four years into a studious retirement. He needs some one to do the more costly and doubtful part, at least, of his experimenting for him, and to furnish him with trustworthy data, on which he can confidently go to work at once.

The recognition of this universal want led to the foundation of agricultural experiment stations. They are not a new idea, nor did they originate in this country. They have been for many years established in Europe, and have there investigated and settled many important questions. Our own experimental work would be much lightened, did we know what all their results are: means are being employed to gain this information, but meanwhile we are often obliged to do over again things that have been already done. There is at present a lack of thorough intercommunication and co-operation between scientific agricultural experiments in this country and in Europe.

The first American experiment station was founded in Connecticut, some time in the seventies. To-day there are between fifty and sixty stations, distributed over the country. In each, on an average, are employed seven or eight picked agricultural experts. The stations cost about fifteen thousand dollars a year apiece. If each one of our army of American farmers paid ten cents per annum, this expense would be defrayed. The total cash value of our farms, farming-tools, and stock is about twelve billion dollars: the stations are a tax upon this sum at the rate of fifty-six dollars to every million dollars. Our farm-produce foots up to two billion two hundred million dollars: thirty-three cents out of every thousand dollars will pay for all our experiment stations. Such percentages can certainly not be deemed excessive; and, on the other hand, many single discoveries made by an experiment station have been of value sufficient to recoup the expense of all of them.

Experiment stations make a regular business of discovery for the advancement of farming, and of diffusing in the most effective manner whatever knowledge of value they acquire. They make a business of answering the farmer's questions for him. There is more in farming than the mere tilling the ground and feeding stock: there is the fascination and the satisfaction that attend the practical application of all scientific results. A comprehension of the action of natural laws in their relation to human progress elevates and strengthens the mind. The farmer who is abreast of his times cannot fail to show the refining influence of healthy mental culture. His brain becomes rich and fertile like his fields. Experiment stations, as established and nourished by the Department of Agriculture, are the sign and epitome of this new intellectual expansion among farmers.

Their experiments are intensely practical, as well as theoretical and tentative: their work is done not in the laboratory only, but in the greenhouse, the garden, the orchard, the field, the stable, and the dairy. Much

of what they accomplish could not be undertaken by any private individual or by private enterprise. Researches are systematically pursued into the most recondite and obscure regions,—experiments which cost large sums of money, and much of the value of which is in demonstrating what the farmer ought to avoid doing, as well as what he ought to do. The work of each station consists primarily in investigations having special applicability to the particular requirements and conditions of the farming neighborhoods among which it exists: then, there are questions of general importance, which all the stations study in common. Pains are taken to secure free and constant communication between all of them, and between them and the Department; and bulletins are always being issued, and placed in the hands of the farming population, containing, in clear and practical language, the concrete fruits of their study. Thus the best uses of the Department itself are continually and immediately available in all parts of the Union: the stations are so many alter egos, as it were, of the central establishment, modified and disencumbered to meet the special exigencies of their several localities. An Office of Experiment Stations has been created by Congress in the Department, whose special duty it is to correspond with and oversee the stations, to aid in linking them together, in co-ordinating their efforts, and in publishing their results.

Since all operations relating to agriculture are comprised in the work of the stations, it would be impossible to even catalogue a tithe of them here. Some of the stations are experimenting with home-made and commercial fertilizers; others are seeking means to restore fertility to worn-out lands; others are taking up the subject of fruits and vineyards; others, again, study the composition and storing of fodders, or experiment on the feeding of animals, on their diseases and the remedies therefor. In States where much of the soil is arid, irrigation is given prominence in the investigations, as is sugar-making in Louisiana, and wine-making in California. Here and there a station devotes itself mainly to poultry-raising, or to the treatment of bees.

It is the policy of the stations to institute experiments among farmers on their own farms, both for practical and for educational purposes. This tends to make each farmer a fresh centre of information: the stations become the head-quarters of local agricultural associations, where the members consult with and instruct one another. A New Jersey farmer lately declared that knowledge of the fact that his soil lacked potash (which he had learned through the neighboring station) had been an immediate gain to him of five hundred dollars. In North Carolina, an increase of fourteen per cent. in the quality of commercial fertilizers sold in the State is due to the work of the local station. In Wisconsin, the experiments in pig-feeding have been of extraordinary value. Nowhere, in short, have the stations failed to pay for themselves hundreds of times over, either directly or indirectly; and it is significant of the general recognition on the part of American farmers of the value of the stations, that no State which has established a station has ever abandoned it. On the contrary, they have steadily increased the pecuniary support afforded them, until now it amounts to hundreds of thousands of dollars, in

addition to the disbursements of the government at Washington. Americans know a good thing when they see it.

But Secretary Rusk's crusade is only beginning yet. Let American constituencies all over the land strengthen his hands and fill his exchequer: he will pay us back, with interest upon interest, thousands per cent. His work is no play nor make-believe: it is solid, practical, and enduring. America can be made a hundredfold as productive, agriculturally, as she is now; and Mr. Rusk is the man to promote and accelerate that increase. He has had to struggle against niggardly appropriations, Congressional delays, and popular ignorance: the great results which, notwithstanding these obstacles, he has achieved, are a warrant of what he can do when his hands are free and his (official) pockets full. And no matter how enormous our productiveness may become, the signs are easy to be seen that we shall need it all. A large fraction of Europe is on its annual way to our shores, to cooperate with our natural increase of population in making this the most populous of continents. Meanwhile, war is the manifest destiny of the Old World; and we must ere long be the food-purveyors of the planet. We shall not need war-ships so much as vessels for the conveyance of meat and vegetables; nor harbor defences so much as bridges to run provision-trains across the sea. While the poor, effete old monarchies fly at one another's throats and snarl at one another's heels, we must feed their widows and orphans and the survivors of their cannon and dynamite. After the last shot has been fired, and the last corpse in uniform buried, the residue of the people may return to the cultivation of a soil now enriched with the sinister fertilization of human blood. But until that time the farming of the world must be done here; and when the futile crusades of armed warriors have passed away and been forgotten, the beneficent crusade of Secretary Rusk will be remembered, and his deeds will be held in honor.

Julian Hawthorne.

SONNET.

"HEAVEN lies about us in our infancy,"
The poet saith,—then, in unhappier mood,
Denies to man all but the power to brood
Sadly o'er common care. The mystery
Astir in every flower, at such decree
Mute protestation gives. The common good
That asks for toil, for strife, for conflict rude
In ripened growth, still grants ungrudgingly
Wide scope and freer air. A little child
Will sit in meadow-grass contentedly
And play with sunbeams. The dark storm-clouds piled
High in the west will front the man, but he,
Viewing 'mid storm and sun the grandeur wild,
Enraptured dreams of immortality.

Elizabeth Carpenter.

THE BOARD OF TRADE AND THE FARMER.

THE Board of Trade deals in the products of the farmer. On the face of things, then, it would appear that their interests are identical, and that each works for the good of the other, even while working mainly for its own good. Dealers are useful to producers, and producers are useful to dealers, as a general rule. A dealer must buy and sell; he cannot sell unless he buys, and he cannot buy wheat unless somebody else produces wheat. Now, when one man produces wheat in order to sell it, and another man comes along and buys it at the market price or at an agreed price, it would certainly be a fair inference that the buyer was useful to the seller, since he falls in with the seller's wishes, and what more can the seller want?

But there is an opinion, started by no one knows whom, and kept alive by parties who thrive only by the disaffection of certain classes, that Boards of Trade, organized for the purpose of dealing in farm-products, and permitting transactions based on the calculations of operators as to the value of products in future months, up to six, eight, and even twelve months ahead, are hostile to the best interests of the farmer. Such transactions are styled "gambling," and when once this opprobrious epithet has been launched it is supposed to stick, and to fatally injure the character of the institutions that permit them to take place. It is an old maxim, that when once you have given poor dog Tray a bad name you can hang him without remorse or fear of consequences.

Now, while it is very easy to stigmatize a purchase or sale of *May* wheat in the preceding *November* as gambling, it is difficult to prove such a charge. Gambling is betting on hazards, whose results are not only not calculated, but cannot be calculated with any reasonable degree of certainty. Thus, a person hazards a certain sum on the chances of a pair of dice turning up double sixes, or on the chances of a roulette-ball dropping into a hole numbered say 25. The dice may turn up in any one of twenty-two combinations, and the roulette-ball may drop into any one of thirty-six holes. By no process of calculation can he estimate the probabilities of any of these events, and, while his chances may be one in twenty-one, or one in thirty-six, the dealer does not allow him these odds, but cuts them down so that in the long run the dealer *must* win and the gambler *must* lose.

In addition to this, the transaction is absolutely unproductive. It does not bring money to the purchase of any industrial product, but is a sheer waste of time, and in reality a method by which one man robs another with the other's consent.

The transactions of a Board of Trade are wholly different in nature and result. They establish prices, for the day, of farm-products, based on the quotations of the markets of the world; and they also give an opportunity to people who look forward, to deal in future supplies at prices based on the expectations of crops and consumption.